Approximate and Assumed Vegetation of the Former County Park Property on Fourmile Lane, Bandon, Oregon

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November 7, 2013
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Introduction

This report describes a remotely-sensed inventory of the vegetation and natural environment of the former county park on Lower Fourmile Road, Bandon, Oregon. This inventory was done to provide information on the habitats present within the area and to preliminarily understand their ecological values and risks. The property is currently owned by Bandon Biota and is being considered for potential land exchange with Oregon Parks and Recreation Department (OPRD). The potential area of exchange (hereafter referred to as the “study area”) was assessed for plant communities, wetlands, state and federally-listed plant species, and habitat quality based primarily on aerial photograph interpretation and knowledge of patterns of vegetation present in the adjacent Bandon State Natural Area. Some of the mapping was informed by past observations on the property while walking through it en route to Bandon State Natural Area on the trail that passes through the property.

Significant natural habitats and areas highly degraded by invasive species are both present in the study area. Deterioration of habitat condition and ecological function is due primarily to weed infestation and subsequent stabilization of formerly significant sparsely vegetated sand and dynamic dunal habitats that provide a vanishing habitat niche for a number of declining species of plants and wildlife.

Past Work and Existing Data

Very little prior ecological inventory information was available for the study area. Sources of additional background on the property and its botanical environment were available from several peripherally related sources. These sources include:

- 1954 aerial photography from the Bureau of Land Management (BLM).
- A 1964 pictorial monitoring document of adjacent Bandon State Natural Area Property also from the BLM
- Oregon Biodiversity Information Center (ORBIC) rare species Geographic Information System (GIS) data.
- A historic vegetation map based on General Land Office land survey notes from 1857.
Description of the Study Area

The property assessed in this inventory is located on the shores of the Pacific Ocean and New River approximately 6 miles south of the city of Bandon, Coos County, Oregon. The property is at the end of Lower Fourmile Road. The legal location is Township 29S, Range 15W, Section 35, NE 1/4. See Figure 1.

The study area is part of the Bandon Dune Sheet and is characterized primarily by beach, sand dunes, and deflation plains in various stages of stabilization. Elevation ranges from 0 to 60 feet above sea level. The topography ranges from flat to gently rolling, with some lower concavities.

The 111-acre property abuts the Pacific Ocean to the west and extends inland at its widest point for approximately 2150 feet from the mean high tide line. New River runs through the center of the property on a north-south alignment.

Lower Fourmile Road enters the property from the south and terminates on the property. There is a parking area at the end of the road. A trail continues north through the property along the same alignment as Fourmile Road. The trail forks in the northern half of the property, with one fork leading northwest to New River, and two other forks leading north and east to enter Bandon State Natural Area.

The property was formerly used for public park purposes under Coos County ownership until its acquisition by Bandon Biota.
Historic Vegetation and Change

Historic vegetation within the study area was mapped by Hawes *et al.*, 2008 using General Land Office (GLO) land surveyor notes from 1857. The mapping produced by Hawes *et al.* is depicted in Figure 2. The survey notes for the township in which this study area occurs describe the area as mostly being “poor sandy barrens” with areas of “scrubby pine and spruce”.

Review of aerial photography and ground photographs taken in the 1950’s and 1960’s indicates that radical change in vegetation has taken place since these photographs were taken. European beachgrass and gorse have spread dramatically across the landscape, and the stabilized sand has in many places become forested. Topography may also have been altered over time, especially in areas that were formerly characterized by open sand and sparse native grasses. These areas have likely built up vertically in some locations due to the sand-catching and stabilizing effect of both European beachgrass and gorse. The presence of a thick forested strip of vegetation between the beach/littoral strand areas outside the study area and the interior dunal habitat has likely changed the wind dynamics of the area, further accelerating the stabilization and succession to shrubland and forest types from historic, previously more open and dynamic shifting dunal types. The succession of the forested strip itself was likely accelerated by the deflation plain effect that accompanies foredune formation due to European beachgrass invasion. This deflation plain formation would have lowered the surface elevation of the sand to just above the water table and made it possible for vegetation to take over and rapidly transition to forest.

The mouth of New River and Twomile Creek has migrated continuously over the years. In the 1954 aerial imagery shown in Figure 3 it can be seen that neither New River nor Twomile Creek passed through the property. At other points in history, New River and/or Twomile Creek may have passed through the property in other configurations.
**Figure 2. Historic Vegetation** (from Hawes et al. (2004))

- **Legend**
  - Study area
  - Bandon State Natural Area

**Historic Vegetation**

- "Grass marsh"
- Burned northern mesic mixed conifer (or “fir, etc.”) forest with mostly deciduous understory. May include various combinations of Douglas fir, western hemlock, red cedar, grand fir. Often with scattered trees surviving fire.
- Marsh or "wet meadow," composition unknown.
- Prairie, wet and dry undifferentiated. Includes "swale" and "glade" if adjacent line segments are prairie. May contain "thickets" or "scattering" trees if most distances > 100 links.
- Sand bar, "sandy barrens," sand dunes (witness trees > 400 links distant), tidal mudflats (estuarine or riverine), "quicksand." May have scattered vegetation in unmappable patches.
- Shore pine forest on sandy soils. May include Douglas fir, Sitka spruce, western hemlock, and madrone, with Port Orford cedar ("white cedar") and chinquapin present in Coos and Curry counties. Understory may include manzanita, salal, evergreen huckleberry.
- Shore pine savanna on sandy soils or rocky headlands. May include Douglas fir, Sitka spruce, western hemlock, madrone, with Port Orford cedar ("white cedar") and chinquapin present in Coos and Curry counties. Understory may include salal, evergreen huckleberry.
- Sitka spruce forest with various combinations of Douglas fir, grand fir, western hemlock, red cedar, red alder, bigleaf maple. "Dense" understory of vine maple, salmonberry, thimbleberry, huckleberry, salal, devils club, gooseberry, cascara, elderberry.
- Water bodies > 1 chain across. Includes ocean, rivers, sloughs, ponds, beaver ponds, lakes, "marshy lakes" and "bayous.”
Figure 3. Vegetation Change Since 1954
Methods

Plant community mapping and description in this study was done by means of aerial photography interpretation based on the characteristics of similar sites visited in person within Bandon state Natural Area as part of that Property’s Vegetation and Habitat Inventory (Bacheller, 2013). Patterns of vegetation composition recur fairly predictably across the landscape, and the remotely-sensed mapping is believed to be coarsely accurate for the present study area.

Vegetation and land cover was digitized in the office into a GIS shapefile using the following OPRD data fields and criteria:

1. Scientific name for each plant association.
2. Common name for each plant association.
3. Equivalent or closest plant association(s) in the published literature.
4. Habitat type for each native plant association. Abbreviated as “F”=forest, “S”=shrubland, “W”=woodland, “H”=herb/forb-land. In many cases these habitats were recorded as hybrid types – for example, “H/S” was used in areas that were predominantly herbaceous, but which contain scattered or sporadic groupings of shrubs.
5. Age class code for each forest or woodland association polygon: A = old, B = mature, C = mid-aged, D = young. Age class is recorded relative to the characteristic tree species for the polygon. This is important in that shore pine is often classed as mature at 40 years old according to its lifespan; but, Sitka spruce would be mid aged at the same number of years old because of the much longer lifespan of the species and the habitats associated with the species.
6. Conservation rank. This code is ascribed to a plant community based on the ORBIC “Classification of Native Vegetation of Oregon”. Where plant communities are represented exactly in the Classification, the conservation rank code is copied directly. Where a plant community is similar but not completely equal to a community in the Classification, it is preceded by a “~”. When a community is not represented at all in the Classification, but is deemed somewhat rare, it is given a rank based on best professional judgment. These cases are identifiable in the data by text format, being “~S?” where “?” will be a particular number depending on the polygon. Note that they do not have the “G?” portion of the code that those communities that are represented in the Classification have. The numbers (1 through 5) following either G or S in the code represent conservation status of each native association, based on ORNHIC ranking criteria. The number “1” represents types that are endangered throughout their range, and “5” represents types that are demonstrably secure. A description of how this ranking system works is included online at: http://www.natureserve.org/explorer/ranking.htm.
7. OPRD condition rating representing the condition of each plant association delineated as a discrete polygon will be rated using the codes below:
   - Condition “E” (excellent): Pristine or near pristine native plant community. Exotic plants typically have a significant presence in the species composition over less than 10 percent of the polygon.
• **Condition “G” (good):** Native plant community generally of good vigor and condition. Exotic plants typically have a significant presence in the species composition over 10 to 30 percent of the polygon. Condition may be downgraded by factors other than invasive species presence – i.e. trampling, fire, windthrow, erosion, etc.

• **Condition “M” (marginal):** Native plant community substantially degraded by intrusion of exotic plants or human disturbance. Exotic plants typically have a significant presence in the species composition over 30 to 70 percent of the polygon. Condition may also be downgraded by factors other than invasive species presence – i.e. trampling, fire, windthrow, erosion, etc.

• **Condition “P” (poor):** Native plant community highly degraded or replaced by exotic plants. Exotic plants typically have a significant presence in the species composition over more than 70 percent of the polygon. Condition may be downgraded by factors other than invasive species presence – i.e. trampling, fire, windthrow, erosion, etc.

8. Wetland polygon indicator, representing wetland plant association types and other surface water features (“yes”/“possibly”/“partially” field). The “possibly” value is used in cases where formal determination plots would be necessary to accurately indicate whether the polygon is wetland or not. The “partially” value is used in cases where a polygon contains wetland and non-wetland that are not mappable without formal wetland delineation plots and methodology.

9. Botanical Resource Value rating. These values quantify the conservation value of each plant community habitat polygon in the study area.

Ratings are numeric and range from 1 to 4, based on the value assignment decision matrices included below. Due to the importance of age class in determination of value of forested and woodland habitats, a matrix that factors in age is needed for forest and woodland. A separate matrix without age class parameter is used for herbaceous and shrubland habitats.

The value 1 denotes highest resource value and conservation priority – usually a legally protected allocation due to species presence, conservation easement, natural area registration, etc. A value of 2 denotes very high natural resource value and conservation priority – but without legal protection. A value of 3 denotes habitats that are either degraded, extremely common, or semi-artificial – but with some significant natural resource value remaining. A value of 4 denotes a habitat that is severely degraded and of low natural resource value.
Table 1. Botanical Resource Value Determination For Non-Forest Habitations

<table>
<thead>
<tr>
<th>Special designation*</th>
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<th>Condition G</th>
<th>Condition M</th>
<th>Condition P</th>
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<td>1</td>
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<td>3</td>
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<td>2</td>
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<td><strong>Priority Habitats</strong></td>
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<td>2 if age class A,B,C 3(2) if age class D</td>
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<tr>
<td></td>
<td></td>
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<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>moderate</td>
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</tr>
<tr>
<td></td>
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<td>3(2)</td>
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<tr>
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<td><strong>Possible wetlands</strong></td>
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*for the purposes of this matrix, “special designation” means that the polygon is part of a conservation area such as a State Natural Area Reserve, a Research Natural Area, an Area of Critical Environmental Concern, a designated Wilderness, a conservation easement, or a Habitat Conservation Plan.*

10. Field for other comments that are pertinent to the purpose of this work scope.
11. Priority habitat identification field – either those habitats that are existing investments or commitments; or, those that are of local, regional, or statewide concern.
Current Vegetation and Habitats

A variety of forest, woodland, herbaceous, and shrubland habitats ranging from wetland to upland are present in the study area. Habitat types mapped within the study area are depicted in Figure 4. The broad habitat groupings of Forest, Woodland, Shrubland, and Herbaceous are described briefly below. These broad groups and patterns are followed by detailed descriptions of habitats corresponding to Figure 4.

Forested communities

Forested communities are abundant and common in the study area and range from dry dunal types dominated by shore pine and gorse to wet shore pine swamps. The vast majority of the forest within the study area is characterized by high abundance of shore pine. Sitka spruce is common in many of the forested areas as well, but reaches its highest abundance in topographically low-lying areas. Some of the forests have their stand origin prior to 1954, but the majority has become established more recently as a result of dune stabilization and succession. Upland forest types typically have very dense shrub understories characterized by evergreen huckleberry, wax myrtle, salal, and gorse in varying amounts according to topographic position and canopy composition/density. Forb layers in upland forests within the study area are often sparse. Where forests are wetland, the understory shrub layer becomes sparser, and slough sedge is dominant.

Woodland communities

Woodland communities are primarily transitional in nature, particularly now that historic dynamic disturbance process related to dune movement has essentially been halted. Most woodland within the study area is dominated by shore pine. Where gorse has not achieved dominance, European beachgrass, salt rush, and dunal forbs are present in the understory. Some areas of woodland are likely transitional between European beachgrass or red fescue/seashore bluegrass dunes and shore pine/wax myrtle-evergreen huckleberry-salal or shorepine/gorse – skipping over the normal shorepine/kinnikinnik and shore pine/ hairy manzanita intermediate steps in the successional pathway.

Shrubland Communities

Shrubland communities are of two main groupings: gorse dominated non-native associations, and native upland and wetlands types. Gorse dominated associations are usually characterized by very dense cover of gorse, with lesser amounts of European beachgrass, red fescue, seashore bluegrass, and bracken fern. Native wetland types usually center on hooker willow, evergreen huckleberry, cascara, crabapple, salmonberry, or black twinberry.

Herbaceous Communities

Herbaceous communities fall into both wetland and upland categories. Most of the herbaceous wetland communities are dominated by slough sedge or salt rush. Pacific silverweed is common in these associations. Upland herbaceous communities are dunal in nature and are composed of varying amounts of European beachgrass, red fescue,
seashore bluegrass, salt rush, hairgrasses, hairy cats-ear, lesser hawkbit, seashore lupine, spiny sand mat, and other less abundant sand-dwelling species.

Each of the broad habitat groups described above can be further subdivided into “plant associations”. Plant associations are communities of plants that occur together due to similarity of their individual habitat requirements. Habitat types are usually more easily described in terms of the species they contain than in terms of the underlying, causal environmental gradients (such as sun exposure, soil moisture, soil fertility, wind exposure, salt exposure, etc) that determine which species occur where. Although these underlying causal gradients are useful as predictors of habitat species composition, they are nearly meaningless as habitat descriptors in-and-of themselves. Plant associations are the primary, intuitively-understandable descriptors of habitat and land cover, and they can in fact indicate aspects of past disturbance, ecological condition, wetland status, and future composition that the causal gradients often can’t.

Ecological assessment of OPRD properties begins with documentation and inventory of habitat types present in the study area by means of mapping coherent, often recurrent, groups of species across the landscape. The mapping presented in this section of this report spatially catalogs the distribution of plant communities (as descriptors of habitat) across the study area. This plant community mapping, in turn, provides the ability to produce subsidiary analyses including the mapping of wetlands, weed infestations, changes over time, community rarity, species rarity, and threats. These subsidiary analyses are presented in other sections of this report.

Because the concept of plant associations is so important to understanding ecology and provides a common language for ecologists to be able to compare, contrast, and share information, ecologists have worked together to organize data on plant associations into databases that provide information on distribution and rarity. Using these data, it is possible to define areas of highest conservation priority based on rarity and distribution. In each of the descriptions of plant communities below, rarity and distribution data are presented in the field “conservation rank” by means of locating the published equivalent plant community in the “Classification of Native Vegetation of Oregon” (Kagan et al 2004) and assigning its conservation rank to the equivalent plant association mapped in the study area. These published equivalents are reported in the field “published equivalent(s)” in the descriptions below. Because of mapping scale and the complicated intermingling of habitats that often occur across the landscape, it is often possible to have multiple published equivalents for a mapped community. For example, hummocky ground often contains wetland associations in the troughs and upland vegetation on the higher ground. If these variations occur in patches less than 10-20 meters across, they: 1) do not show up on maps produced at a property-level scale; and 2) are often not feasible to map due to time limitations in situations where the intermixing is frequent and complicated. These habitats that contain multiple equivalents are usually referred to as plant community mosaics.
The information presented below corresponds to the map codes that label the polygons in Figure 4. The plant community structural notation is as follows: “/” denotes a change in canopy level, “-“ separates species co-occurring in a canopy level. Items in parentheses “( )” are patchy or sparse. When more than one unmappable distinct plant community type occurs within the overall map polygon, the distinct communities or canopy layers that compose the mosaic community are denote by square brackets “[ ]”. Comments on the polygon follow plant community composition codes. Equivalent published and ranked plant communities that make up part of the polygon’s mosaic community are listed under “Published Equivalent(s)”. The conservation rankings of these communities are listed under “Conservation rank”. These ranks are defined as follows (from Kagan, 2004):

**Rank** is a code identifying the conservation status of the plant association. It is composed of a global rank (“G”) followed by a state rank (“S”).

1 = Critically imperiled because of extreme rarity, with 5 or fewer occurrences or very few remaining acres.  
2 = Imperiled because of rarity, with 6-20 occurrences or few remaining acres.  
3 = Either very rare and local throughout its range or found locally in a restricted range; uncommon, with 21-100 occurrences.  
4 = Apparently secure, though it may be quite rare in parts of its range, especially at the periphery; many occurrences.  
5 = Demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery; ineradicable under present conditions.  

These standardized ranks are used by all natural heritage programs and conservation data centers throughout North America. They are based on the best available information.

**Mapping Units from Figure 4:**

1. **(Ulex europaeus) / Ammophila arenaria with possible remnant Festuca rubra or Poa macrantha community components**  
   (gorse) / European beachgrass with possible remnant red fescue or seashore bluegrass community components  
   Published equivalent(s): AMMARE WITH POSSIBLE REMNANT FESRUB OR POAMAC COMMUNITY COMPONENTS  
   Conservation Rank: NA;G1S1;G2S1  
   This highly degraded community is characterized by the invasive species gorse and European beachgrass. Gorse is relatively sparsely interspersed with European beachgrass sandy habitat. European beachgrass areas may contain vestiges of native dunal communities containing red fescue, salt rush, or seashore blue grass. Herbaceous species present likely include European beachgrass, red fescue, seashore bluegrass, beach knotweed, hairy cat’s ear, yellow and silver hairgrasses, lesser hawkbit, beach evening primrose, and cudweed.

2. **(Salix hookeriana) / Carex obnupta - Argentina egedii**  
   (hooker willow) / slough sedge - Pacific silverweed  
   Published equivalent(s): SALHOO / (ARGEGE) - CAROBN  
   Conservation Rank: G4S4  
   This wetland plant community is widespread in lower topographic positions and concavities within the study area. It is characterized by an herb layer dominated by slough sedge and pacific silverweed. Hooker willow occurs mainly along edges and in small pockets. Other shrubs that are sometime present include wax myrtle, evergreen huckleberry, salal and gorse. These species also tend to be around the edges rather than in the interior of this wet habitat. Shore pine is occasional in some locations. Other herbs sometimes present include skullcap speedwell, lesser hawkbit, and bentgrass.

3. **bare sand with very sparse Cakile, Ammophila, and other dry-sand-beach species**  
   bare sand with very sparse searocket, European beachgrass, and other dry-sand-beach species
This community type is essentially bare sand, but has very sparse patches of searocket, European beachgrass, and a and other beach species. These communities are subject to ocean overwash during winter storm events. These areas provide suitable habitat for *Abronia umbellata*, a plant species listed as Threatened under Oregon’s Endangered Species Act. This habitat has been occupied by Western Snowy Plover (a listed bird species) in recent years and it continues to provide suitable habitat.

This landcover type occurs in two locations. Both are clearings used for parking. The eastern polygon of this type was formerly the official parking for the county park.

This community type occurs on the shore of New River. The vegetation is of unknown composition. It appears to be an herbaceous grassy or sedge dominated type, perhaps with tufted hairgrass, Pacific silverweed, Lyngby sedge, slough sedge, small-fruited bulrush, three-square bulrush, salt rush, falcate rush, taper tip rush, and trifolium. It may also contain invasive species such as reed canarygrass, *Myriophyllum aquaticum*, *Egeria densa*, and colonial bentgrass. Conservation rank was assigned based on potential for tufted hairgrass and Lyngby sedge types.

This highly degraded community is characterized by the invasive species gorse and European beachgrass. Gorse is interspersed with European beachgrass sandy habitat. European beachgrass areas may contain vestiges of native dunal communities containing red fescue, salt rush, or seashore blue grass. Herbaceous species present likely include European beachgrass, red fescue, seashore bluegrass, beach knotweed, hairy cat’s ear, yellow and silver hairgrasses, lesser hawkbit, beach evening primrose, and cudweed.
8  *Salix hookeriana / Carex obnupta - Argentina egedii*

**hooker willow / slough sedge - Pacific silverweed**

Published equivalent(s): SALHOO / (ARGEGE) - CAROBN

Conservation Rank: G4S4

This wetland plant community is widespread in lower topographic positions and concavities within the study area. It is characterized by a shrub layer dominated by hooker willow and herb layer dominated by slough sedge and Pacific silverweed. Other shrubs that are sometime present include wax myrtle, evergreen huckleberry, salal and gorse. These species tend to be around the edges rather than in the interior of this wet habitat. Shore pine is occasional in some locations. Other herbs sometimes present include skullcap speedwell, lesser hawkbit, and bentgrass.

9  **New River**

Published equivalent(s): NA

Conservation Rank: NA

This mapping unit depicts the wetted extent of New River in 2013 at the time of the aerial photograph’s acquisition. Actual river extent changes very frequently, including with tides.

10  *Pinus contorta - Picea sitchensis / Ulex europaeus (- Vaccinium ovatum) (- Myrica californica)*

**shore pine - Sitka spruce / gorse (- evergreen huckleberry) (- wax myrtle)**

Published equivalent(s): SERIOUSLY DEGRADED PICSIT-PINCON/GAUSHA-VACOVA

Conservation Rank: NA; G3S3

This association is essentially shorepine and Sitka spruce woodland underlain by gorse. There are some patches of remnant native species such as wax myrtle, cascara, evergreen huckleberry, and salal. European beachgrass is sometimes present. Some areas were planted decades ago with either knob cone pine or Monterey pine which is now large and dominant.

11  *Pinus contorta / Myrica californica - Vaccinium ovatum - Gaultheria shalloon / (Carex obnupta)*

**shore pine / wax myrtle - evergreen huckleberry - salal / (slough sedge)**

Published equivalent(s): PICSIT-PINCON/GAUSHA-VACOVA; PINCON/CAROBN

Conservation Rank: G3S3; G1S1

This community represents a mosaic habitat in which the shore pine/wax myrtle-evergreen huckleberry-salal community and the shore pine/slough sedge community are unmappable intermixed or in which they intergrade in transitional areas. This is one of the most widespread and abundant mapping units in the southern portion of the study area. Tree layer composition is dominated by shore pine, but Sitka spruce is often present and Douglas-fir is sometimes present. There are areas along the western boundary of the study area in which knobcone or Monterey pine are abundant due to dune stabilization plantings more than 40 years ago. Where the community is drier or topographically elevated, the shrub layer is dense with wax myrtle, evergreen huckleberry, and often salal. The herb layer in these situations is usually very sparse due to shrub density, but bracken fern and kinnikinnik are sometimes present. Wetter areas usually contain these shrubs at lower densities, and have an herb layer dominated by slough sedge. Gorse is sometimes significant, particularly along edges with more abundant sunlight penetration and in transition zones with polygons dominated by gorse. Some of these gorse-infested zone approach the shore pine/gorse(-wax myrtle)(-evergreen huckleberry) association.
12 **Pinus contorta / Ulex europaeus**  
shore pine / gorse  
Published equivalent(s): PINCON/ULEEUR  
Conservation Rank: NA  
This highly degraded community is characterized by an overstory tree layer dominated by shorepine, underlain by dense and nearly impenetrable gorse. Sitka spruce is sometimes present. Sometimes sparse wax myrtle is present with the gorse in the shrub layer. When an herb layer is present it sometimes contains European beachgrass in drier locations. One location in the north of the study area near Twomile Creek has vestigial hooker willow, salmonberry, and slough sedge. This shore pine gorse community has a broad range of possible habitat that it can over take: everything from bare sand to shore pine/slough sedge communities at the drier end of its hydrology range.

13 **Pinus contorta / Ulex europaeus / Ammophila arenaria**  
shore pine / gorse / European beachgrass  
Published equivalent(s): NA  
Conservation Rank: NA  
This highly degraded community is characterized by an overstory tree layer dominated by shorepine, underlain by the invasive species gorse and European beachgrass. Gorse may be patchy in tall and dense, nearly impenetrable patches interspersed with European beachgrass sandy habitat, or gorse may be more widely spread and smaller. European beachgrass areas may contain vestiges of native dunal communities containing red fescue, salt rush, or seashore blue grass, but these are infrequent and barely, if at all, present over most of the coverage of this mapping unit. Bracken fern, salt rush, pearly everlasting, rattlesnake plantain, lesser hawkbit, hair cat’s-ear, and/or yellow hairgrass can occur with European beachgrass where gorse is not overly dense.

14 **Pinus contorta / Carex obnupta**  
shore pine / slough sedge  
Published equivalent(s): PINCON/CAROBN  
Conservation Rank: G1S1  
This forest swamp community occurs in depressions and low plains. The overstory is comprised of shore pine. Understory shrubs are general sparse in the centers of these units, and may include wax myrtle, evergreen huckleberry, and salal. Edges with more upland communities generally have high cover of these shrub species. The herb layer is dominated by slough sedge. Bracken fern, rattlesnake plantain, bentgrass, rushes, skullcap speedwell, and/or sword fern are sometimes present. This community has the highest conservation ranking, G1S1.

15 **Pinus contorta / (Ulex europaeus) / Ammophila arenaria with possible remnant Festuca rubra or Poa macrantha community components**  
shore pine/ (gorse) / European beachgrass with possible remnant red fescue or seashore bluegrass community components  
Published equivalent(s): AMMARE WITH POSSIBLE REMNANT FESRUB OR POAMAC COMMUNITY COMPONENTS  
Conservation Rank: NA;G1S1;G2S1  
This highly degraded community is characterized by the invasive species gorse and European beachgrass. Gorse is interspersed with European beachgrass sandy habitat. European beachgrass areas may contain vestiges of native dunal communities containing red fescue, salt rush, or seashore blue grass. Herbaceous species present likely include European beachgrass, red fescue, seashore bluegrass, beach knotweed, hairy
cat’s ear, yellow and silver hairgrasses, lesser hawkbit, beach evening primrose, and cudweed. Shore pine is relatively sparse and has invaded relatively recently.

16  *Carex obnupta - Argentina egedii*

slough sedge - Pacific silverweed  
Published equivalent(s): CAROBN-ARGEGE  
Conservation Rank: G4S4

This wetland association is associated with topographic depressions that hold water well into the growing season. Slough sedge and Pacific silverweed dominate the interior of these associations, with lesser amounts of bentgrass, salt rush, skullcap speedwell, falcate rush, and sometimes other sedges sometimes also being significant components. The edges of these wetlands often have hooker willow, gorse, and/or shore pine.

17  *Ulex europaeus*

gorse  
Published equivalent(s): NA  
Conservation Rank: NA

This community is essentially a gorse monoculture.
Figure 4. Current Vegetation/Habitats

1. (gorse) / European beachgrass with possible remnant red fescue or seashore bluegrass community components
2. (hooker willow) / slough sedge - Pacific silverweed
3. bare sand - sparse sea rocket
4. Developed
5. Emergent marsh / wet meadow
6. European beachgrass-sea rocket
7. gorse / European beachgrass with possible remnant red fescue or seashore bluegrass community components
8. hooker willow / slough sedge - Pacific silverweed
9. New River
10. shore pine - Sitka spruce / gorse ( - evergreen huckleberry) ( - waxmyrtle)
11. shore pine (-sitka spruce) / waxmyrtle - evergreen huckleberry - salal / (slough sedge)
12. shore pine / gorse
13. shore pine / gorse / European beachgrass
14. shore pine / slough sedge
15. shore pine/ (gorse) / European beachgrass with possible remnant red fescue or seashore bluegrass community components
16. slough sedge - Pacific silverweed
17. gorse

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.
**Wetlands**

A variety of wetland types occur across the study area. The distribution of wetlands is depicted in Figure 5, below.

Topographically low-lying or concave portions of the study area are usually at least partially wetland. No instances of perched wetlands were encountered in the study area, due primarily to the fact that the soils are essentially sand over all of the higher, rolling ground. Wetland habitat types include forested swamps, sedge meadows, and shrub swamps. The majority of the wetlands within the study area are characterized by abundance of slough sedge, hooker willow, and/or Pacific silverweed.

Being an aerial photography interpretation exercise, no formal delineation was done in the course of this study. All assessment of potential wetlands was based on topography and the vegetation discernible on aerial photographs. True wetland and water feature extents are probably smaller than those depicted in Figure 5, especially in areas mapped as “partially”, or “possibly” wetlands. These extent issues arise for two reasons:

1) wetlands and non-wetlands often intermingle in unmappable mosaics of habitat. This patchwork is often made up of small patches of upland within an area predominantly wetland, or the converse – small wetlands in a matrix of upland. In many cases, hummocky ground is wet in the troughs and dry on the tops of the hummocks and minor ridges. *In this assessment, when true wetland extents are not mappable for reasons of habitat complications or “mosaicing”, the extent of the upland/wetland mosaics are mapped.*

2) Wetlands mapped on the subjective basis of surface indicators do not take all wetland indicators into consideration. Soil and subsurface hydrology characteristics must also be assessed in the process of formal wetland determination and delineation. In some cases, features mapped as wetlands based on surface vegetation are not actually wetlands when subjected to the full range of subsurface tests. In other cases, an area that is actually wetland might not be mapped as such based on vegetation alone because characteristic vegetation was absent due to deep shade under a forest canopy. This assessment intended to conservatively map potential wetlands – opting to err on the side of including rather than excluding potential wetlands. Potential wetlands and areas that include wetlands (but for which boundaries are imprecise) are mapped as “possible” and “partial” wetlands. Those features that are indubitably wet or that show a preponderance of obligate wetland vegetation are mapped as wetlands without these qualifying labels.

Because of the limited scope and detail of this assessment’s treatment of wetlands, any use of the wetland features mapped in this assessment should only be for general planning purposes. Specific construction designs that overlap with or closely approach these areas will need official wetland determination and delineation, leading up to Oregon Department of State Lands (DSL) and US Army Corps of Engineers (USACE) wetland permits.
Figure 5. Wetlands.
Invasive Plants/Weeds

Invasive Plant Species (or weeds) are extremely pervasive in portions of the study area. The primary weeds of concern are gorse (Ulex europaeus) and European beachgrass (Ammophila arenaria). These species are very dense and competitive colonizers in this environment. Their biomass and density can reach levels high enough to completely displace all other species and radically change the structure, composition, and function of the habitats they invade. Invasive species that can take over to this extent are often referred to as “system-modifying weeds”. In the case of the proliferation of gorse and European beachgrass within the study area and in the larger dunal landscape context, the effects of the species go beyond simply displacing vegetation. As sand stabilizers, these species have strongly contributed to the recently altered topography and hydrology of the study area – having replaced low, rolling, actively moving dunes with areas of higher, stabilized dunes and areas of lowered deflation plains (see Historic Vegetation and Change, above).

Several other species are very widespread and prominent in the study area, but do not generally cause significant risk of loss of native habitat types. These species are not system-modifying in the way that dense colonizers like gorse and European beachgrass are, and they usually occur sporadically and sparsely in open habitats in the study area. Species in this group include, hairy cat’s ear (Hypochaeris radicata), Lesser hawkbit (Leontodon taraxacoides), yellow hairgrass (Aira praecox), and silver hairgrass (Aira caryophyllea).

Under a relatively dense forest canopy, gorse and European beachgrass are not able to attain or maintain system-modifying densities. In these situations, the species are not as detrimental to habitat quality and function. This fact suggests the possibility of afforestation as a means of control in those areas that are either already completely lost and not feasible to restore, or in areas with no access by machine. Open, dunal habitat is a vanishing habitat of very high conservation priority, and afforestation should not be considered as a means of control where there is still some dunal function in place and where restoration is feasible.
Rare and Endangered Plant Species

No rare plant surveys have been done within the study area. This study is solely based on aerial photography interpretation and passive knowledge of the site from passing through it on the way to Bandon State Natural Area in past years.

Potential Habitat for Listed and Rare Species
Potential habitat is present for a number of rare species. This report will not address the wide range of potential sensitive species that could occur in the study area, but will instead focus on listed species that are protected by law on state lands. Potential habitat is present for three species listed under Oregon’s Endangered Species Act. Habitat for these species is depicted in Figure 6.

Table 3. State–listed species of the Coos and Curry County Coast

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Heritage Global Rank</th>
<th>Heritage State Rank</th>
<th>Federal Status</th>
<th>State Status</th>
<th>Heritage List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abronia umbellata ssp. breviflora</td>
<td>Pink sand verbena</td>
<td>G4G5T2</td>
<td>S1</td>
<td>SOC</td>
<td>LE</td>
<td>1</td>
</tr>
<tr>
<td>Oenothera wolfii</td>
<td>Wolf’s evening-primrose</td>
<td>G1</td>
<td>S1</td>
<td>SOC</td>
<td>LT</td>
<td>1</td>
</tr>
<tr>
<td>Phacelia argentea</td>
<td>Silvery phacelia</td>
<td>G2</td>
<td>S2</td>
<td>SOC</td>
<td>LT</td>
<td>1</td>
</tr>
</tbody>
</table>

Abria umbellata ssp. umbellata:
This species is known to occur along the shoreline of Bandon State Natural Area on the dry-sand beach and in the ocean-front dunes. The species ranges from California to British Columbia and is confined to sparsely vegetated dry sand beach. It is threatened by European beachgrass competition. The New River spit provides very suitable habitat for the species.

Oenothera wolfii. Wolf’s evening primrose:
The Oregon Department of Agriculture’s Plant Conservation Program describes wolf’s evening primrose habitat as:


23
This habitat is present within the study area.

*Phacelia argentea*, silvery phacelia:
Silvery phacelia occurs from California to the central Oregon Coast. It occurs in unstabilized and semi-stabilized dunes and on bluffs and grasslands on the immediate coast. The species is threatened by development and habitat loss. The proliferation of invasive non-native plant species (especially European beachgrass, gorse, and broom species) is a major source of habitat loss not directly resulting from habitat conversion to developed uses. Suitable habitat is present for the species within the study area.
Figure 6. Potential Habitat for Listed Species.
Botanical Resource Value Ratings

Botanical Resource Value is a ranking of ecological importance of a habitat in a landscape and global conservation context. It is assessed by jointly assessing seven environmental characteristics of each plant community/habitat type present in the study area. The ecological parameters used are: conservation ranking, condition, restoration priority, restoration feasibility, wetland status, age class (for forested communities), and rare species presence. The interaction of these parameters in assignment of a Botanical Resource Value rating is described in detail in the “Methods” section of this report. Botanical Resource Value captures information about plant communities, their ecological condition, and relative value for preservation. Generally speaking, the higher the Botanical Resource Value class number is, the lower value the site is from a vegetative habitat and wetlands perspective. In typical OPRD planning, Botanical Resource Value is just one factor in later determination of a composite suitability rating that factors in historical, cultural, wildlife, and other types of restrictions and opportunities. Composite suitability determinations are typically made in the course of Master Planning process, when all resource and land-use-related variables are assessed together.

Botanical Resource Value ratings for the study area are depicted in Figure 7, below. Note that the areas in green represent a composite botanical and wildlife value, in that they factor in Western Snowy Plover habitat.

Calculation of Botanical Resource Value was accomplished using a computer program (VB Script) in an ArcGIS environment that performs the decision tree (matrix) described in the methods section. The parameters needed for performing these calculations are fields within the GIS polygon attribute table for vegetation cover.
Figure 7. Natural Resource Value Ratings.

- **Study Area**
- **Natural Resource Value Rating**
  - Highest natural resource value. Habitat contains legally protected species.
  - High natural resource value. Habitat is at least partially wetland.
  - Moderate natural resource value. Habitat is degraded, but still may contain some important natural resource elements.
  - Moderate natural resource value. Habitat is degraded, but still may contain some important natural resource elements. Wetland.
  - Low natural resource value. Few or no remnants of important natural resource elements.
References


